

## The Effects of Instant Messages on Distance Learners' Perception of Transactional Distance and Sense of Community

Oğuz Onat

Yalova University, Turkey,  <https://orcid.org/0000-0002-3191-7837>

Yasemin Bertiz

Karamanoglu Mehmetbey University, Turkey,  <https://orcid.org/0000-0001-7388-5901>

**Abstract:** In this research, the effects of consistently delivering instant messages to individuals attending distance education on their perceptions of transactional distance and sense of community were examined. Messages are planned to be recollective and informative to the students. Students who volunteered to take part in the study were university students from various and sundry departments. Distance learners ( $N=99$ ) are distributed to four distinct treatment groups in random manner while keeping the number of female and male students were approximately same within groups. Instant messages were designed to have utmost minimal impact on neither classroom dynamics nor the content and structure of the lessons. Each group received these messages on their smartphone. WhatsApp groups were formed and scheduled messages were sent regularly. When pretest and post test scores of transactional distance perception and community sense analyzed, result indicate that the students who receive these messages tend to have lower scores of transactional distance perception and higher scores of community sense.

**Keywords:** Distance education, E-learning, Online education, Transactional distance

**Citation:** Onat, O. & Bertiz, Y. (2022). The Effects of Instant Messages on Distance Learners' Perception of Transactional Distance and Sense of Community. In A. Ben Attou, M. L. Ciddi, & M. Unal (Eds.), *Proceedings of ICSES 2022-- International Conference on Studies in Education and Social Sciences* (pp.398-404), Antalya, Türkiye. ISTES Organization.

### Introduction

Distance education, also known as online learning or e-learning, has become a popular mode of education in recent years. This mode of education offers flexibility and convenience for students, as they can access course materials and participate in class discussions from anywhere with an internet connection. However, distance education can also present challenges, such as the potential for communication breakdowns and misunderstandings between students and instructors.

One concept that has been explored in the literature is the idea of transactional distance, which refers to the

psychological and emotional distance between students and instructors in a distance education setting. According to Moore (1973), transactional distance refers to the "gap between the learner and the teacher" in a distance education setting (p. 7). This gap can be caused by a variety of factors, such as differences in communication styles, lack of nonverbal cues, and lack of face-to-face interaction. Transactional distance can also be influenced by the learner's prior knowledge and experiences, as well as their individual learning style and preferences (Moore, 1989).

This separation can create barriers to learning, and can lead to feelings of isolation and disconnection among students. To overcome this challenge, effective distance education programs need to address transactional distance and foster interaction and engagement between students and instructors.

The concept of sense of community was first introduced by McMillan and Chavis (1986), who defined it as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (p. 9). Since then, many researchers have expanded upon this definition and have identified various dimensions of sense of community, including affective, behavioral, and cognitive components.

The concept of sense of community has been extensively studied in the context of physical communities, but has only recently been explored in the context of online communities. Instant messaging (IM) is a popular form of online communication, which has been found to be associated with a sense of community among users.

One of the key factors that contribute to a sense of community in IM is the presence of shared values, beliefs, and interests among users. For example, in a study of IM use among university students, participants reported that they felt a sense of community with other users who shared their interests and values (Kraut et al., 1998). Additionally, the presence of social norms and expectations that guide behavior in IM can also contribute to a sense of community, as these norms and expectations provide a sense of belonging and identity for users (Walther, 1996).

Another factor that contributes to a sense of community in IM is the presence of social support among users. IM allows for real-time communication, which can facilitate the exchange of emotional and instrumental support among users (Kraut et al., 1998). This can be particularly helpful in times of crisis or stress, as IM can provide a sense of connection and support for users who may not have access to these resources in their physical communities.

Transactional distance can have negative effects on student engagement and motivation, leading to lower levels of learning and achievement. One strategy that has been suggested for reducing transactional distance in distance education is the use of instant messaging (IM).

Instant messaging is a form of synchronous online communication that allows users to exchange messages in

real-time. It has become a popular method of communication in both personal and professional contexts, and has also been used in education to facilitate interaction and collaboration among learners and instructors.

However, the use of IM in distance education also has some potential drawbacks. For example, IM can be disruptive to the learning process if not used properly, and can lead to a lack of focus and concentration among learners. In addition, IM can also create challenges for instructors, such as the need to respond to a large volume of messages in a timely manner and the potential for misunderstandings or miscommunications.

To maximize the benefits and minimize the drawbacks of using IM in distance education, it is important for instructors to establish clear guidelines and expectations for its use. This can include setting designated times for IM communication, providing prompt and detailed feedback on questions and concerns, and using IM in conjunction with other forms of communication, such as email and discussion forums.

## Method

### Design

A survey was administered at the beginning and end of the distance education course to all groups. The independent subdimensions of the study included four types of periodic informative instant messages relating to autonomy, structure, dialogue, and sense of community, with various orders. The dependent subdimensions were perceived transactional distance and sense of community. All students received standard course-related instant messages via email, but the experimental groups also received additional instant messages via a popular messaging app installed on their smartphones.

### Setting

The study took place in which undergraduate and higher education vocational students at a private university in Istanbul, Turkey were required to take a number of online courses each semester. These courses included foreign language, Turkish language, and information and communication technology. The classes were held through web conference on weeknights, with each lesson lasting an hour except for Turkish language lessons which lasted 80 minutes with a 10-minute break in the middle. The semester consisted of 14 weeks and 14 online classes were held during this time.

In addition to the online classes, students were enrolled in the university's distance education system, which was essentially a web-based learning management system with additional features. The instructor had the option to post materials weekly, but this was at their discretion and they could modify their choice if students made suggestions. The instructor also had the option to upload other materials, such as presentations used in class. There was interactive content available for each course, including midterm exams given in the fifth and tenth weeks of the semester. Each midterm contributed 4% to the overall course grade and consisted of 20 multiple-choice questions that needed to be answered within 30 minutes.

Students were also required to turn in an assignment each semester. They had four weeks to complete the homework after the instructor selected the subject and published it to the system. This assignment contributed 28% to their overall course grade. At the end of the semester, final exams were administered in person and typically consisted of 25 to 40 multiple-choice questions. These exams contributed 60% to a student's overall course grade. Students could contact the distance education office via phone, email, or in person, and they could also message their instructors using the learning management system.

### **Participants and Sampling**

The population of this study consisted of undergraduate and higher education vocational students. A convenience sampling method was used to select participants, who were first- and second-year undergraduate students enrolled in various academic departments and programs at the institution. The age range of the participants was 18 to 21. A total of 160 distance learners were contacted, and 99 of them agreed to participate. The experimental groups each included 23, 20, 17, and 21 participants, while the control group had 18 participants. The number of male and female participants was taken into account in the process of forming the groups.

Group 1 received messages only relating to the learner's autonomy and the structure's subdimensions, while group 2 received messages regarding the subdimensions of structure, dialogue, and sense of community. Group 3 received messages only about the subdimensions of dialogue, learner autonomy, and sense of community, and group 4 received messages about the subdimensions of structure, dialogue, learner autonomy, and sense of community.

### **Data Collection Instruments and their Administration to Students**

In this study, the perception of transactional distance scale (Horzum, 2011) and the sense of community scale in online distance education environments (Ilgaz & Aşkar, 2009) were used in this study.

Students completed a survey measuring their perception of transactional distance before their final exam at the end of the autumn semester. Most students completed the questionnaire using paper and pencil and finished it in less than 20 minutes. Some students needed to complete the survey electronically, so it was converted to Google Forms and a link was sent to their email addresses through the distance education department's learning management system. The instructions for the survey were included at the beginning of the electronic version. The survey was due in two weeks, and the same process was used at the end of the spring semester.

### **Results**

The researchers calculated the scores for the different subscales on the transactional distance scale, and then checked to see if the data was normally distributed. If the data was normally distributed, they used a paired

samples t-test to see if there were any significant effects of using periodic informative instant messages. If the data was not normally distributed, they used the Wilcoxon signed ranks test instead.

For the sense of community scale in online distance education environments, there was only posttest data available. The researchers checked the distribution of this data and found that it was not normally distributed. Therefore, they used the Kruskal-Wallis H Test to determine whether there were any significant differences between the means of the different groups' scores.

After above-mentioned procedures have been conducted, results are aggregated in a single table for convenience and ease of reading (see Table 1). The students in the S+LA group had significantly different scores for their perception of the learner autonomy on the pretest and posttest. The participants in S+D+SoC group had significantly different scores for their perception of dialogue, structure, autonomy and community sense. Also the distance learners in S+D+LA+SoC group had significantly different scores for their perception of dialogue and sense of community.

Table 1. Summary Table for Dialogue, Scructure and Autonomy Subdimensions

Treatment	Dialogue	Structure		Autonomy		
		Scructure Flexibility	Content Organization	Control	Learner Autonomy	
S+LA	* -	*	-	-	*	-
S+D+SoC	+	+	+	+	+	-
D+LA+Soc	-	-	-	-	-	-
S+D+LA+SoC	*	+	-	-	-	-
Control	-	-	-	-	-	-

*	Wilcoxon Signed Ranks Test	+	Significant Difference
-	Paired Samples t Test	-	No Significant Difference

## Discussion

The study found that when participants received instant messages related to structure and learner autonomy, their scores for perceived learner autonomy decreased. However, the messages did not affect their perception of structure. This aligns with previous research on the topic (Bere, 2013; Smit, 2012).

Additionally, when distance learners were sent instant messages about dialogue, structure, and sense of community, their scores for these subdimensions increased. This suggests that the messages may have a positive

impact on these factors. These findings confirm relevant literature as well (Doering, Lewis, Veletsianos, & Nichols-Besel 2008, Wang, Woo, & Quek, 2012).

According to the findings, when distance learners are sent instant messages about the all subdimensions together, their perceptions of dialogue and sense of community have improved. These findings confirm relevant literature as well (Calvo, Arbiol & Iglesias, 2014).

However, sending messages regarding all these subdimensions except for structure at once had no effect on perception scores, which conflicts with existing literature. It is recommended that future studies test the effects of instant messages on these subdimensions individually.

All in all, study finds partial evidence on sending periodic informative instant messages to distance education students about structure, dialogue, and sense of community have increased their perception of structure and dialogue, while decreasing their perception of transactional distance and increasing their perception of sense of community. These findings align with previous research on the topic.

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